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STUDIES IN THE LAURACEAE, III. SOME CRITICAL AND NEW SPECIES OF ASIATIC LINDERA, WITH OCCASIONAL NOTES ON LITSEA

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THE SPECIES treated herein represent only those difficult of recognition in the herbarium. No attempt has been made to make a complete citation of literature, for this was done in 1932 by Liou.[1] Only supplementary and later publications have been noted where necessary. The *Litsea* species included are only incidental in clearing up certain species which have been confused with *Lindera*.

Lindera assamica (Meissn.) Kurz, For. Fl. Brit. Burma **2:** 308. 1877; Hooker f., Fl. Brit. Ind. **5:** 182. 1886; Liou, Laurac. Chine Indoch. 125. 1932.

Aperula assamica Meissn. in DC. Prodr. **15**[1]: 240. 1864, p.p.

DISTRIBUTION: India.

Lindera assamica, as well as *L. Meissneri,* has been reported from China. Liou even described a variety of the latter, var. *kwangtungensis* from the province of Kwangtung. Closely related is *Lindera annamensis* Liou from French Indo-China. *Lindera assamica,* as interpreted by King, according to Hooker f., l.c., is based on *Jenkins 1171,* from Bhotan, and has large elliptic or lanceolate-elliptic membranaceous leaves up to 15 cm. long, with prominent reticulation on the upper surface. The inflorescences are numerous on slender peduncles, the branchlets as well as the leaves beneath are rusty- or tawny-hirsute and pubescent (fide Hooker f., l.c.). *Jenkins 124* (Hooker states that this number is erroneously credited to Jenkins), the second specimen on which Meissner based *Aperula assamica,* is not the latter but *L. Meissneri* King

[1]Liou, Ho, Lauracées de Chine et d'Indochine. Paris, 1932.

in Hook. f. The material from China does not belong in this species. It has leaves which are far more coriaceous, and inflorescences which are borne on stouter peduncles. There is not the fragile, delicate appearance in the Chinese specimens that one notes at once in the Indian.

Lindera Meissneri King in Hooker f., Fl. Brit. Ind. **5**: 182. 1886; Liou, Laurac. Chine Indoch. 126. 1932.

Aperula assamica Meissner in DC. Prodr. **15**[1]: 240. 1864, p.p.

DISTRIBUTION: India.

The leaves of the above are never more than 9 cm. long, and are caudate-acuminate, dark, glabrous, shining above, and borne on more slender petioles than those of *Lindera assamica*. The inflorescences are smaller and the branchlets are smooth. Again, the Chinese material is no match for the species, for the same reason that it must be kept apart from *L. assamica,* i.e., the specimens are heavier and coarser.

Lindera Meissneri King f. **lenticellata** Liou, Laurac. Chine Indoch. 126. 1932.

DISTRIBUTION: French Indo-China.

Liou described this variety from Tonkin as differing from the type in having its branchlets covered with lenticels, and its leaf-blades smaller and finely long-acuminate. With the types of both the species and variety at hand, the differences appear to be the numerous lenticels present on the branchlets of the variety, the more coriaceous leaves, the upper surface of which is opaque as opposed to the shining upper surface of the leaves of the species. The size of the leaves as well as their caudate-acuminate tips scarcely varies between the species and the variety. Many specimens from Yunnan have the lenticels but the leaves are shining above and not as dark as those of Liou's variety. These former will be taken up later. The type of the following species (Liou's var. *kwangtungensis*) has lenticels on the branchlets, though not as plentifully as in the variety *lenticellata*.

Lindera kwangtungensis (Liou), comb. nov.

Lindera Meissneri King f. *kwangtungensis* Liou, Laurac. Chine Indoch. 126. 1932.

Arbor 6–20 m. alta, ramulis teretibus, junioribus angulatis striatis lenticellatis minute pubescentibus. Folia alterna, lanceolata vel lanceolato-elliptica, subcoriacea, 5–10 cm. longa et 1.5–3 cm. lata, obtusa, acuta vel acuminata, ad basim acuta, utrinque glabra, conspicue reticulata, supra opaca, subtus glaucissima, penninervia, nervis 4–8-jugis, utrinque plerumque inconspicuis, costa subtus conspicue elevata, fusca,

petiolo 7–10 mm. longo, glabro. Inflorescentiae ♂ umbellae numerosae ad apicem ramulorum aggregatae, sessiles brevi-pedunculataeve, axillares vel in ramulis brevibus subterminales, pedunculatae, pedunculis, 12–20 mm. longis gracilibus adpresse pubescentibus. Flores 4–9, ± 3 mm. longi, pedicellis tenuibus 5–6 mm. longis adpresse pubescentibus, lobis 6 sparse pubescentibus ellipticis, staminibus 9, 3 interioribus bi-glandulosis. Fructus subglobosus, 5–6 mm. diam., apiculatus, glaber, viridi-nigrescens, disco 2–3 mm. lato, pedicello 4–6 mm. longo crasso rugoso.

DISTRIBUTION: southeastern China (Kwangtung, Hainan, Kwangsi).

KWANGTUNG: *S. P. Ko 50170* (TYPE of *L. Meissneri kwangtungensis*, ♂, NY). HAINAN: *F. C. How 73449; H. Y. Liang 63521, 64753; N. K. Chung & C. L. Tso 44341.* KWANGSI: *C. Wang 40694; W. T. Tsang 24307* (possibly).

This variety seems worthy of specific rank, since the differences are more than the smaller leaves and the nerves less salient below, which Liou gives as the distinguishing characters. The leaves are more coriaceous than those of the species, their reticulation more conspicuous, the under surface more glaucous, the upper surface opaque instead of shining, and the inflorescence longer and less slender than in the species. There seem to be no short shoots bearing inflorescences as is typical in the variety and the branchlets of the latter are somewhat lenticellate.

Lindera kwangtungensis (Liou) Allen f. **robusta**, f. nov.

A typo differt foliis majoribus, late ellipticis, abruptius acuminatis, ad basim attenuatis, petiolis ad 2 cm. longis, crassis.

DISTRIBUTION: southeastern China (Hainan).

HAINAN: Chim Fung Mt., near Sha Mo Kwat Village Kan-en District, *S. K. Lau 5083* (TYPE ♂, AA), fairly common, height 14 m., diam. 27 cm., flower yellow; *N. K. Chun & C. L. Tso 44340*, pp. (fruit, AA), *43871, 44101, 44170, 44329; H. Y. Liang 63379, 64528; L. Tang 444; C. Wang 35922.*

The form differs from the species in having leaves up to 12 cm. long and broadly elliptic, more abruptly acuminate, and more attenuate at the base, with stouter petioles up to 2 cm. long. The flowers of the ♀ inflorescence are very densely pubescent. The original sheet labeled *Chun & Tso 44340* consisted of two entities — *Lindera kwangtungensis* and a species of *Linociera*.

Lindera Metcalfiana, spec. nov.

Arbor vel frutex 3–12 m. altus, ramulis teretibus, junioribus plus

minusve angulatis striatis rubro-brunnescentibus glabris. Folia alterna, elliptica, membranacea, 9–14 cm. longa et 3–4 cm. lata, acuminatissima caudatave, saepe falcata, ad basim acuta, glabra, utrinque reticulata, opaca, supra viridiscentia, subtus plus minusve glauca, penninervia, nervis 8–10-jugis, supra impressis, subtus elevatis, rubescentibus, petiolo 10–12 mm. longo, glabro. Umbellae ♂ paucae vel solitariae, axillares, pedunculatae, bracteis glabris deciduis, pedunculis 7–15 mm. longis tenuibus glabrescentibus. Flores 5–10, pubescentes, virides (fide collectoris), pedicellis 3–5 mm. longis minute pubescentibus, lobis 6 oblongo-ovatis sparse pubescentibus, staminibus 9, 3 interioribus bi-glandulosis. Fructus globosus ± 6 mm. diam., nigrescens, disco parvo pubescente 3–4 mm. lato leviter dentato ciliato, pedicello ± 6 mm. longo, crasso. Umbellae ♀ ignotae.

DISTRIBUTION: southeastern China. (Hainan, Kwangtung, Kwangsi).

HAINAN: *C. Wang 36163* (TYPE, AA), January 6, 1934, tree 12 m. high, diam. ½ m., in mixed woods, fl. green, *35720, 36156; H. Y. Liang 63464; S. K. Lau 5216; N. K. Chun & C. L. Tso 44044.* KWANGTUNG: *Wang & Ling* for *W. Y. Chun 7405, 7376; Y. Tsiang 798; C. C. C.* (under direction of Levine) *3087.* KWANGSI: *R. C. Ching 8198; S. K. Lau 28746.*

The species belongs in the group with the preceding species, but is distinct from them. It has the membranaceous leaves (which appear rather thicker in the fruiting specimen, as is to be expected), with reticulations similar to but not as distinct as those of *L. Meissneri.* Nor are the leaves shining above, nor quite as glaucous below, and they are more caudate than those of the latter. *Wang & Ling 7376* and *C. C. C. 3087,* from Kwangtung, have leaves approaching a coriaceous texture and more prominently reticulate than the specimens cited above. In this respect, they suggest the succeeding species from western China, though for the present they will be left as *L. Metcalfiana,* presumably their nearest relative.

The following numbers collected by H. T. Tsai in Yunnan are probably specimens of very young flowers. The buds are advanced enough to show the anthers with the unmistakable two locules. The affinity is with *L. Metcalfiana* from Kwangtung and Hainan, though there are a few differences noted. The branchlets and veins are less reddish in the Yunnan material. The leaves are shorter, usually, and broader, and in some instances the glaucescence of the underleaf surface is not as apparent as in the Hainan specimens. The individuals from Yunnan are in too young a state to enable satisfactory dissection which might produce further differentiating characters, so for the time being they

will be included with *L. Metcalfiana*. YUNNAN: *H. T. Tsai 51556, 51634, 51674, 51683.*

The above is named for Dr. Franklin P. Metcalf, Curator of the Herbarium of Lingnan University and a keen student of the flora of southeastern China.

Lindera dictyophylla, spec. nov.

Arbor 2.5–9 mm. alta, ramulis teretibus, junioribus plerumque angulatis striatis, rubro-brunnescentibus glabrescentibus. Folia alterna, lanceolata, 8–13 cm. longa et 2.5–3.5–(4) cm. lata, coriacea, attenuate acuta vel acuminata, basi acuta, glabra, utrinque crasse reticulata, supra plus minusve nitida, viridiscentia, subtus glauca, penninervia, nervis 5–8-jugis supra impressis subtus elevatis brunnescentibus, petiolo 6–12 mm. longo pubescente vel glabrescente. Inflorescentiae ♂ sessiles vel brevipedunculatae. Umbellae usque 5, axillares, pedunculatae, bracteis deciduis, pedunculis 5–7 mm. longis paullo crassis pubescentibus. Flores 10–12, pubescentes, flavo-albi (fide collectoris), brevi-pedicellati, lobis 6 oblongis utrinque pubescentibus, staminibus 9 leviter exsertis, 3 interioribus bi-glandulosis. Umbellae ♀ 2–4, axillares, pedunculatae, bracteis deciduis, pedunculis 5–6 mm. longis paullo crassis, pubescentibus. Flores 10–12, pubescentes, viridi-albi (fide collectoris), brevi-pedicellati, lobis 6 ovatis, staminodiis 9, 3 interioribus bi-glandulosis. Fructus globosus, ± 6 mm. diam., viridescenti-purpurascens (fide collectoris), disco parvo pubescente 3–4 mm. lato leviter dentato-ciliato, pedicello ± 5 mm. longo crasso pubescente.

DISTRIBUTION: western China (Yunnan).

YUNNAN: Shun-Ning Hsien, *C. W. Wang 71835* (TYPE ♂, AA), mountain slope, February 1936, alt. 2800 m., flower yellowish-white; *C. W. Wang 71992,* same locality and date, alt. 2700 m., flower greenish-white (♀, AA); Fo-Hai, *C. W. Wang 77395,* alt. 2000 m., fruit green to purple, aromatic (AA); *C. W. Wang 74186, 76276, 78273; H. T. Tsai 51924; G. Forrest 9562, 9674, 26204, 26212.*

Forrest 26212 has more uniformly larger leaves than most of the Wang numbers. In number 9674 the leaves are more elliptic than lanceolate. In number 26204 the tendency is toward a more leafy branch with the leaves smaller and distinctly elliptic. Number 9562 is also more leafy with smaller leaves, ovate rather than lanceolate. These data are noted here to indicate the extreme variability of the species.

The following specimens are very leafy. The mature leaves are shining, dark brown above and paler below, varying in size and shape on the same branch, lanceolate to elliptic. The very young leaves and

branchlets are clothed in golden brown, closely appressed pubescence which is early deciduous. The color of the leaves in the entire Tsai collection means nothing, for it is apparent that the specimens were dried artificially and burned in the process, in some cases very severely. YUNNAN: *H. T. Tsai 56351, 56760, 56794, 56801, 56809, 56869, 56876, 56877.*

In this complex from Yunnan, there appear to be about three entities, where the leaves are coriaceous, mostly shining above and extremely reticulate, usually glaucous below. There is a great temptation to describe three separate species, because of the fact that the groups of specimens seem to be so very different. Close study reveals the impossibility of separating any of them on good characters that do not vary. Such characters as leaves shining above, and glaucous below, for example, altitude, season of collection, and conditions of drying the specimens undoubtedly play an important part in modifying these characters. Since in this group glaucescence is determined apparently by the state of the minute exudations from each cell of the lower leaf epidermis, it is easy to understand that the natural appearance of the leaf might be changed easily by any one of the factors mentioned above.

The following numbers mostly from Yunnan, show smaller leaves, more variable in size than those cited under the species. There seems to be a trend toward more numerous inflorescences per branch, the upper surface more or less shining, the under glaucous. YUNNAN: *A. Henry 12822, 12822 A,B,C, 13285; G. Forrest 9525; H. T. Tsai 51557; C. W. Wang 78378.* KWANGSI: *A. N. Steward & H. C. Cheo 133.*

Lindera longipedunculata, spec. nov.

Frutex 3–6 m. altus, ramulis teretibus, junioribus angulatis striatis rubescentibus vel brunnescentibus glabris. Folia alterna, elliptica, subcoriacea, 8–15 cm. longa, et 3–5 cm. lata, acuta vel abrupte acuminata, glabra, utrinque crasse reticulata, supra opaca, viridi-brunnescentia, subtus glauca, penninervia, nervis 8–10-jugis supra leviter subtus conspicue elevatis brunnescentibus, costa supra plerumque impressa, petiolo 10–12–(15) mm. longo glabro. Inflorescentiae ♂ sessiles vel brevipedunculatae. Umbellae plerumque solitariae, pedunculatae, bracteis deciduis glabris, pedunculis 2–2.5 cm. longis tenuibus gracillimis saepe curvatis glabris. Flores 6–8–(12?) pallide flavescenti-virides (fide collectoris), pubescentes, lobis 6 oblongis utrinque pubescentibus, staminibus 9–10, 5–6 bi-glandulosis. Fructus globosus, ± 5–6 mm. diam., nigrescens, immaturus viridis (fide collectoris), disco parvo glabrescente, 3–4 mm. lato leviter dentato ciliato, pedicello ± 1 cm. longo leviter crasso.

DISTRIBUTION: western China (Yunnan).

YUNNAN: Taron-Taru Divide, Tehgai, *T. T. Yü 20986* (TYPE ♂, AA), November 5, 1938, evergreen shrub 10 ft., common among mixed forest, alt. 2300 m. ♂, fl. pale yellowish green; Lungnan, same locality, *T. T. Yü 20014,* August 28, 1938 (fruit & ♀ fl., AA); *T. T. Yü 20876, 20986; G. Forrest 16065, 16104, 17528.*

This species is set apart from the preceding species of the group by its loosely reticulate, opaque, elliptic, abruptly acuminate leaves, always glaucous below; and by its striking inflorescence with long, slender, graceful peduncles, often curving beneath the weight of the large, full-flowered umbels at their tips.

Lindera latifolia Hooker f., Fl. Brit. Ind. **5:** 183. 1886; Liou, Laurac. Chin. Indoch. 125. 1932.

DISTRIBUTION: India and western China (Yunnan).

INDIA. E. Bengal: Griffith (Kew Distrib. No. 4321) (TYPE, Kew; isotype, Gray).

CHINA. Yunnan: *C. W. Wang 67011, 72101, 72527; A. Henry 13269; G. Forrest 9613, 9633, 15846, 17541, 17688; T. T. Yü 17252; H. T. Tsai 54331, 54407, 56368, 56392, 56866, 56892, 58903.*

Of the species of this particular group there is only one of which material is plentiful and that is the above species, described from India. Outside of India, thus far, it is to be found in the province of Yunnan only. There is variation to be seen in the Yunnan plants but there is no doubt that they represent the Chinese form of Hooker's species. The latter is distinct, because of the broad leaves which are greyish glaucous below, with the veins covered with an almost ferrugineous pubescence. *Lindera Balansae* from Tonkin, has this same distinctive lower-leaf surface, but can be separated readily by the much more narrow lanceolate to oblong-lanceolate leaves, as opposed to the broadly obovate or elliptic leaves of *L. latifolia. Lindera racemosa,* also from Tonkin, and very close to *L. Balansae,* according to the description and the photo of the type available, is distinguished by lack of pubescence on the lower leaf surface and by the presence of numerous umbels from a common peduncle, instead of the solitary, or at most, 2 umbels found in *L. Balansae.*

The Tsai specimens from Yunnan lack, for the most part, the characteristic grey-glaucous lower leaf surface, though the usually attending pubescence is even more dense than in the type. Except for this feature, the specimens do not vary enough to warrant a new variety. As has been mentioned before, the Tsai material seems to have been badly

burned, so any variation in leaf texture may be expected of the specimens.

Lindera glauca (S. & Z.) Blume, Mus. Bot. Lugd.-Bat. **1**: 325. 1851; Liou, Laurac. Chine Indoch. 129. 1932.

Benzoin glaucum S. & Z. in Abh. Akad. Muench. **4**[3]: 205. (Fl. Jap. Fam. Nat.) 1846; Nakai, Fl. Sylv. Kor. **22**: 80, t. 14. 1939.

For complete synonymy, see Liou, l.c.

DISTRIBUTION: Japan and China.

Nakai l.c. has made a var. *glabellum* of the above species as follows: "Folia adulta infra secus costas et margine infra medium pilosella, cetera glaberrima." No specimens of the variety are available, but variation or density of pubescence do not seem strong enough characteristics on which to set up a variety. Examination of type material may show sufficient differences, not mentioned in the description.

Lindera angustifolia Cheng in Contr. Biol. Lab. Sci. Soc. China **8**: 294, fig. 21. 1933.

Benzoin sinoglaucum Nakai, Fl. Sylv. Kor. **22**: 79. 1939.

DISTRIBUTION: eastern China (Chekiang, Kiangsi, Kiangsu, Hupeh and Kwangtung).

CHEKIANG: *S. Chen 1028* (TYPE ♀ fl. of *B. sinoglaucum*, Tokyo; isotype, AA); *2554; R. C. Ching 4814; F. N. Meyer 230.* KIANGSI: *F. B. Forbes 1417* (probably other Chinese specimen without number cited by Nakai, l.c. under *B. sinoglaucum*); *A. N. Steward 2734; Y. L. Keng 1519; E. H. Wilson 1634.* KIANGSU: *Y. L. Keng 2387; C. L. Tso 1737* (cited with original description of *L. angustifolia*), *819, 889, 1209, 1432, 1678; R. C. Ching & C. L. Tso 466, 502, 552, 674, 696, 702, 709, 724; J. Hers 2313.* HUPEH: *H. H. Chung 9067; S. C. Sun 24.* KWANGTUNG: *F. A. McClure 353 (102, 2721); C. L. Tso 20262.*

A species which is similar to *Lindera glauca* in texture and leaf surface yet differs in the leaf shape which is lanceolate or oblong-lanceolate, as opposed to the obovate-elliptic leaves of *L. glauca*. *Chen 1028* (type of ♀ flowers) and *Forbes 1417*, cited by Nakai with the description of his new segregate from *Lindera angustifolia* do not appear to vary sufficiently from the latter to warrant specific or even varietal delimitation.

Lindera communis Hemsl. in Jour. Linn. Soc. Bot. **26**: 387. 1891; Liou, Laurac. Chine Indoch. 130. 1932.

Benzoin commune (Hemsl.) Rehder in Jour. Arnold Arb. **1**: 144. 1919.
Lindera yunnanensis Léveillé in Fedde, Rep. Spec. Nov. **10**: 371. 1912.
Lindera Bodinieri Léveillé, l.c.

Lindera Paxiana H. Winkler in Limpricht, Bot. Reis. Hochgeb. Chin. 382. 1922.
Lindera glauca Blume var. *nitidula* Lecomte in Nouv. Arch. Mus. Hist. Nat. Paris, sér. v, **5**: 115. 1913.
Beilschmiedia parvifolia Lecomte, l.c. 110.

DISTRIBUTION: China and French Indo-China.

Lindera communis has leaves lanceolate-acuminate, 5–9 cm. long, which vary considerably in leaf surface. The upper surface may be shining and smooth, or dull and minutely reticulate, while the lower may be glabrescent to densely pubescent. The pubescence of the branchlets is variable also. The species is wide-spread throughout China.

In the same group with *Lindera communis* Hemsl., described from central China are found *Lindera nacusua* (D. Don) Merr. (erstwhile *L. bifaria* Benth.) and *L. Laureola* Coll. & Hemsl., from India.

Lindera communis Hemsl. var. **grandifolia** Lecomte in Nouv. Arch. Mus. Hist. Nat. Paris, sér. v, **5**: 118. 1913; Liou, Laurac. Chine Indoch. 131. 1932.

DISTRIBUTION: French Indo-China.

Lecomte's variety, of which only a photo is available, seems to be fairly true to the type of the species except for the larger leaves.

Lindera Laureola Collet & Hemsley in Jour. Linn. Soc. Bot. **28**: 119. 1890; Liou, Laurac. Chine Indoch. 130. 1932.

Benzoin Laureolum (Coll. & Hemsl.) Chun in Contr. Biol. Lab. Sci. Soc. China. 1^5: 45. 1925.

DISTRIBUTION: Burma.

In leaf shape, size and habit, generally, the above recalls *L. communis*. The leaves are more elliptic-lanceolate than lanceolate and there is a complete lack of pubescence except on the inflorescence. The bracts are glabrescent, the corolla sparingly pubescent and the pedicels densely so.

Lindera Nacusua (D. Don) Merrill in Lingnan Sci. Jour. **15**: 419. 1936.

Laurus Nacusua D. Don, Prodr. Fl. Nepal. 64. 1825.
Tetranthera bifaria Wallich, List. No. 2530. 1830, nomen nudum.

For complete synonymy, see Merrill, l.c.

DISTRIBUTION: southeastern Asia.

INDIA: Nepal, *Wallich No. 2530*, pp. (ISOTYPE of *Tetranthera bifaria* Kew, NY).

FRENCH INDO-CHINA. Annam: *E. Poilane 24655.*

CHINA. Yunnan: *C. W. Wang 80470; T. T. Yü 19457.* Szechuan: *Y. Liu 1639, 1784.*

Lindera Nacusua as based on *Laurus Nacusua* D. Don was described according to Don from a specimen of Hamilton from Nepal. Nees described *Daphnidium bifarium* based on *Tetranthera bifaria* Wallich No. 2530, also from Nepal, from Wallich's collection of 1821, and Blinkworth's specimen from Kamaon. The leaves of the specimens at hand from the Wallich Herbarium vary from 5–15 cm. in length, are lanceolate to broadly lanceolate, acuminate, with short appressed pubescence on the lower surface. All have in common somewhat elevated reticulation on the undersurface of the leaves. The young branchlets are densely tomentose. Hooker f. (Fl. Brit. Ind. **5**: 184. 1886) included *Laurus Nacusua* as a synonym of *L. bifaria.* The Griffith specimens which he cites have broadly lanceolate to elliptic leaves somewhat acuminate to acute, with extremely prominent reticulation below, the veins densely villous as opposed to the not too prominent reticulation and dense, short-appressed pubescence of the leaves of *L. Nacusua.* Possibly the following numbers belong with this species. KWANGTUNG: *W. T. Tsang 28511.* HAINAN: *S. K. Lau 5263; F. C. How 72808, 73304.*

Lindera Doniana, spec. nov.

Arbor parva (?), ramulis crassiusculis rugulosis griseo-brunnescentibus glabris, junioribus ferrugineo-tomentosis. Folia alterna, late lanceolata vel elliptica, subcoriacea, 5–7 cm. longa et 2–2.5–(3) cm. lata, acuminata, acuta vel saepe subrotundata, vel leviter emarginata, basi cuneata, supra initio glabrescentia demum glabra, saepe nitida, subtus pallida, crebre ac conspicue reticulata, penninervia, nervis 7–10-jugis supra valde impressis subtus bene elevatis dense villosis, petiolo 5–8 mm. longo crasso pubescente. Umbellae ♂ sessiles, 1–3, brevi-pedunculata, bracteis plus minusve persistentibus, extus ad medium adpresse pubescentibus. Flores 6–8, lobis 6 (?), (post anthesin tantum visa). Fructus subglobosus ± 6 mm. diam., nigrescens, cupula pubescente planiuscula ± 3 mm. lata, pedicello 3.5 mm. longo pubescente crasso.

DISTRIBUTION: India and China (Yunnan).

INDIA. Bengal: *Griffith* (Kew Distrib. No. *4314*) (TYPE, Kew; isotype AA); Khasia: *J. D. Hooker & T. Thomson,* regio trop. 3–4000 ped. (as *Daphnidium bifarium* Nees var.?) (G).

CHINA: Yunnan: *T. T. Yü 20015.*

These specimens, because of their distinctive venation, recall the Japanese species, *Litsea acutivena* Hayata. The *Litsea* species, however,

have definitely cano-sericeous bracts which are even more persistent than those of *Lindera Doniana*. And while in the latter species there is a tendency toward rounded leaf tips, in the former it is the usual case.

Litsea Merrilliana, spec. nov.

Arbor parva vel frutex ad 2 m. altus, ramulis teretibus striatis, junioribus rubescentibus maturis griseis glabris. Folia alterna, oblongo-lanceolata, saepe lanceolata vel elliptica, subcoriacea, 2–7 cm. longa et 1.5–3 cm. lata, acuta vel acuminata, basi obtusa subrotundatave, utrinque glabra, supra minute alveolata, viridia, subtus pallida vel glauca, penninervia, nervis 8–12-jugis flavis, costa utrinque elevata, petiolo 5–10 mm. longo glabrescente. Umbellae ♂ solitariae, axillares, pedunculatae, numerosae, pedunculis gracilibus ad 5 mm. longis pubescentibus, bracteis pallidis adpresse ferrugineo-pubescentibus. Flores pauci, immaturi, pallide virides (fide collectoris) lobis 6 (?), staminibus 7 (?), filamentis pubescentibus. Umbellae ♀ paucae, axillares, pedunculatae, pedunculis 5 6 mm. longis gracillimis glabrescentibus, bracteis adpresse-pubescentibus deciduis. Flores ± 5, virides (fide collectoris), brevi-pedicellati. Fructus oblongus ± 6 mm. longus viridis (fide collectoris), disco 2.5 mm. lato, pedicello ± 2 mm. longo crasso planiusculo subconcavo.

DISTRIBUTION: southern China. (Kwangsi, Kweichow).

KWANGSI: Tzu Yuen District, *T. S. Tsoong* (*Z. S. Chung*) *83503* (TYPE ♂, AA), August 4, 1937, small tree in woods, leaves deep green above, pale green beneath, flower pale green; *T. S. Tsoong 83456; C. Wang 39562* (very young ♀ flower and old fruit). KWEICHOW: Fan Ching Shan *A. N. Steward, C. Y. Chiao & H. C. Cheo 521* (inflorescence in very young fruit).

A species similar to *L. communis* in variation of leaf size and shape, but differing in having more pairs of nerves which are more slender and more nearly at right angles to the mid-rib, a glabrous leaf and veins which stand out yellowish against the green of the leaf. The pistillate inflorescence has very slender peduncles and short pedicelled flowers.

The species is named for Dr. E. D. Merrill, Director of the Arnold Arboretum, whose assistance is indispensable in the preparation of any manuscript dealing with Asiatic plants.

Lindera pedunculata Diels in Bot. Jahrb. **29:** 350. 1901.

Benzoin pedunculatum (Diels) Rehder in Jour. Arnold Arb. **1:** 145. 1919.

DISTRIBUTION: western China (Szechuan, Yunnan).

SZECHUAN: *W. P. Fang 896* (fruit, AA), *844*. YUNNAN: *T. T. Yü 20154*.

Fructus oblongus, ± 9 mm. longus, ± 6 mm. latus, nigrescens, cupula ± 2 mm. longa pubescente ± 5 mm. lata, pedicello ± 6 mm. longo pubescente crassiusculo.

Here also may be placed for the present *Fang 1281*, from Kikiang Hsien, differing in the shorter, thicker, pedunculate umbels and less oblong, more round fruit. It may be a variety, possibly. *Poilane 24561* from Annam has leaves that are heavier, more reticulate and more densely pubescent and the branchlets are stouter. The pedicels are similar to those of *Fang 1281*.

The species has not been taken up, as far as can be ascertained from the literature, since its description, except for the transfer to *Benzoin* in 1919. Its affinity, as Diels suggests, seems to be *Lindera communis*, but it stands apart from that species because of the oblanceolate leaves more or less rounded at the base, and the oblong fruit. No staminate inflorescence has been seen as yet, the type description having been made from a pistillate branch. Just possibly the plant belongs in another genus, *Litsea* for example.

Lindera Duclouxii Lecomte in Nouv. Arch. Mus. Hist. Nat. Paris, sér. v, **5**: 113. 1913; Liou, Laurac. Chine Indoch. 128. 1932.

Lindera spec. ? in Not. Bot. Gard. Edinb. **14**: (Pl. Chin. Forrest. Edinb.) 276. 1924.

DISTRIBUTION: western China (Yunnan, Tibet).

This is a little known species from Yunnan and Tibet. It is perhaps more closely allied to *L. Nacusua* than to any other species, but differs in having broader leaves usually rounded at the base and frequently unequal. The tip is more abruptly acuminate and the flowers larger, borne on longer pedicels.

Lindera sterrophylla, spec. nov.

Arbor parva vel frutex 2.5–5 m. altus, ramulis teretibus striatis rubescentibus, glabrescentibus demum glabris. Folia alterna, elliptica vel oblongo-elliptica, robusta, coriacea, 10–13 cm. longa et 4–5 cm. lata, acuminata vel abrupte obtuse acuminata, basi acuta, utrinque glabra, supra viridia plus minusve nitida, subtus glauca (fide collectoris), penninervia, nervis 6–8-jugis utrinque glabris, costa supra glabra basi ad 5 mm. longitudinem pubescente excepta, supra impressis (costa leviter elevata excepta), subtus conspicue elevatis, petiolo 1–1.5 mm. longo canaliculato glabro praeter canaliculum. Umbellae ♂ solitariae, axillares, brevipedunculatae, bracteis deciduis. Flores 3–6, pubescentes, viridescentiflavi (fide collectoris), pedicellis 3–8 mm. longis minute fulvo-pubescentibus, lobis 6 oblongis, staminibus 9, 3 interioribus bi-glandulosis. Umbellae

♀ paucae similes ♂. Flores parvi ± 2 mm. longi, viridescenti-albi (fide collectoris), pedicellis 1–2 mm. longis pubescentibus, lobis 6 oblongo-ovatis, staminodiis 9, 3 interioribus bi-glandulosis. Fructus obovoideus, 10–12 mm. longus, ± 9 mm. diam., cupula pubescente corrugata ± 3 mm. longa et 3–4 mm. lata, pedicello, 2–6 mm. longo pubescente crasso, pedunculo communi ± 3 mm. longo.

DISTRIBUTION: western China (Szechuan).

SZECHUAN: Under woods, Mt. Omei *T. T. Yü 392* (TYPE ♂, AA), April 18, 1932, alt. 1600 m., small tree 2.5 m. high, leaves dark green above, whitish beneath, flower greenish yellow; Mt. Omei *T. T. Yü 404,* April 18, 1932, alt. 1500 m., shrub among woods, leaves dark green above, bluish beneath, flower greenish white (♀, AA); *Yü 188, 393, 396, 416; W. P. Fang 2468,* Mt. Omei, August 4, 1928, alt. 1050–1220 m., shrub 5 m. in thickets, fruit obovate, drupaceous (AA); *W. P. Fang 23238, 23596.*

A species distinct because of the leathery leaves, glabrous and shining above, slightly revolute at the margins. The leaves of the type are broader and more abruptly acuminate at the apex than are those of the other specimens cited but undoubtedly the same. The very small pistillate flowers form a smaller umbel, which is sessile, than those of the staminate inflorescence. The species is similar to *Lindera Duclouxii* from Yunnan and Tibet, but is distinguished at once by its almost complete glabrity.

Lindera umbellata Thunberg, Fl. Jap. 145. t. 21, 1784.

Benzoin umbellatum Rehder in Jour. Arnold Arb. **1**: 146. 1919.
Lindera membranacea Maxim. in Bull. Acad. Sci. St. Petersb. **12**: 72. 1867, in Mél. Biol. **6**: 275. 1868.
For further synonymy, see Rehder, l.c.

DISTRIBUTION: Japan.

JAPAN: *Thunberg* (TYPE of *L. umbellata,* Upsala; photo & fragm. AA); *Tschonoski* (*Maximowicz,* iter secundum) (TYPE of *L. membranacea,* fruit, Leningrad; isotype AA); *Herb. K. Shiota,* No. *41, 48, 6421.* Unfortunately the other collections in the AA Herb. are unnumbered, among which are numerous sheets collected by E. H. Wilson and C. S. Sargent.

The "umbellata" complex might very aptly be termed unfinished business, for a number of reasons. First, some of the species have been described from immature plants or plants with precocious flowers. Second, it is necessary in this group to keep in close touch with Japanese herbaria, for without authentically annotated specimens it is at times

impossible to understand the Japanese authors' concept of species — one of their native species as wide-spread as *L. umbellata,* for example.

The great difficulty in ascertaining the specific limitations of *Lindera umbellata,* as well as *L. Thunbergii* (now segregated as *L. erythrocarpa*), lies in the fact that both of these species were based on specimens in immature stages. One may guess that leaves will at maturity have lost their early pubescence, but it goes without saying that the remaining pubescence, if any, may vary in many ways. The bark of the young specimens of each species is very different. That of *L. umbellata* is smooth, shining, reddish, while that of *L. Thunbergii* (*L. erythrocarpa*) is more rough and is pale grey. The mature specimens could never be confused. *Lindera erythrocarpa* has leaves very long-attenuate at the base, lanceolate-obovate, reddish brown in color, paler on the lower surface and with rough pubescence. The fruit, according to Makino (Tokyo Bot. Mag. **13:** 140. 1899) is scarlet. *Lindera umbellata* has leaves which are less long-attenuate at the base, are broader and usually not reddish, and very sparsely pubescent if at all, on the lower surface. The fruit (see Makino, l.c.) is black. Makino, in 1900, was correct in separating the two entities, giving *L. Thunbergii* the new name *L. erythrocarpa.* (See Makino, l.c., Rehder, l.c.) In 1846, Siebold and Zuccarini described *Benzoin sericeum* with leaves pubescent above and softly villous below, and with new parts white-sericeous, with branchlets blackish fuscous or black, and fruits globose, mucronulate. Blume in 1851, transferred the species to *Lindera* adding a *β* var. *glabrata* with lanceolate-oblong leaves everywhere glabrous. Makino (1900), made the species a variety of *L. umbellata,* but on careful consideration it appears now to be worthy of specific rank.

At the time of Maximowicz' description of *Lindera membranacea,* he had at hand undoubtedly, the currently known species of *L. umbellata* with which to compare his new species. Hence, his comparison of the broader leaves of *L. membranacea,* with those of *L. umbellata* (probably now Makino's segregate *L. erythrocarpa*), the longer, more slender peduncles and pedicels as opposed to the shorter and thicker peduncles and pedicels of *L. umbellata.* So, it appears from careful examination of the types that the species which Maximowicz describes as new is merely the old *L. umbellata,* and the *Lindera umbellata* to which he compares it the species now known as *L. erythrocarpa.* Thus *L. membranacea* is probably correctly reduced to synonymy under *L. umbellata.*

Lindera umbellata var. **hypoglauca** (Maxim.) Makino in Tokyo Bot. Mag. **14:** 185. 1900.

Lindera hypoglauca Maxim. in Bull. Acad. Sci. St. Petersb. **12**: 71. 1867, in Mél. Biol. **6**: 274. 1868.

Benzoin hypoleucum O. Kuntze, Rev. Gen. **1**: 569. 1891.

Benzoin hypoglaucum (Maxim.) Rehder in Bailey, Cycl. Am. Hort. **1**: 153. 1900.

Benzoin umbellatum var. *hypoglaucum* Rehder in Jour. Arnold Arb. **1**: 146. 1919.

DISTRIBUTION: Japan, and cultivated.

Under this variety the annotated specimens which are available from Japan show a leaf which is much smaller (not more than 7 cm.), usually obtuse or acute, very coarsely reticulate, unmistakably glaucous below, and rather papery in texture. The remainder of the material from Japan was named in America, consists mostly of Wilson's specimens and is indistinguishable from the specimens of *L. umbellata* proper from Japan.

Lindera umbellata var. **pubescens** Lecomte in Nouv. Arch. Mus. Hist. Nat. Paris. sér. v, **5**: 113. 1913; Liou, Laurac. Chine Indoch. 129. 1932.

DISTRIBUTION: western China (Yunnan).

YUNNAN: *J. M. Delavay 4296* (TYPE of *L. umbellata* var. *pubescens*, Paris; photo & fragm. AA).

So far only the type of Lecomte's variety has come to light. It is, unfortunately, a branch in fairly young fruiting stage with leaves seemingly not fully developed. The whole aspect of the plant is suspiciously like that of a *Litsea* in general and of *Litsea sericea* in particular. There are differences which separate it from *Litsea sericea* but it might easily be one of the many species of that genus described from young flowers only.

Lindera erythrocarpa Makino in Tokyo Bot. Mag. **11**: 219. 1897, **13**: 138. 1899.

Benzoin erythrocarpum Rehder in Jour. Arnold Arb. **1**: 144. 1919.

For complete synonymy, see Rehder, l.c.

DISTRIBUTION: Japan, Formosa, Korea, and China.

JAPAN: (TYPE, *Benzoin Thunbergii* S. & Z., Leningrad; isotype, Gray); *Siebold*, as *L. umbellata* Gray; *Maximowicz*, as *L. umbellata* Thunb.; *Herb. K. Shiota, 46, 5517, 5939, 6486, 9662, 9692; T. Tanaka 42 (100185)*.

KOREA: *E. H. Wilson 9445, 9617; E. Taquet 3179*.

FORMOSA: *R. Oldham 446*.

CHINA. Chekiang: *S. Chen 60, 990, 1242, 2785, 2798, 2868,*

3714, 3730, 3909; H. H. Hu 303, 1692; W. C. Cheng 3684; S. S. Chien 735; Y. Y. Ho 913, 1449; Y. L. Keng 1044; R. C. Ching 1421, 1516, 1520, 2496, 2853, 4814, 5009, 5027, 5116, 5144; D. Macgregor, s. n., Ningpo, 1908. Fukien: *R. C. Ching 2505.* Anhwei: *S. C. Sun 1298, 1310, 1416, 1417; R. C. Ching 2853, 3198.* Kiangsu: *R. C. Ching & C. L. Tso 393.* Hupeh: *W. Y. Chun 3649; S. C. Sun 945, 1077, 1118.* Hunan: *W. T. Tsang 23517, 23606.* Kwangtung: *W. T. Tsang 26181.* Kwangsi: *T. S. Tsoong (Z. S. Chung) 81734, 81988; W. T. Tsang 27920.*

The Chinese specimens as a general rule have less grey bark than the typical Japanese material, and the leaves are often somewhat broader with less of a purple tinge below. There is no doubt, however, that they belong in the species.

Lindera sericea Blume, Mus. Bot. Lugd.-Bat. **1**: 324. 1851.

Lindera umbellata var. *sericea* Makino in Tokyo Bot. Mag. **14**: 185. 1900.

DISTRIBUTION: Japan.

JAPAN: *Blume* (TYPE *Lindera sericea,* fruit, Leiden; isotype, NY); specimen from Herb. Lugd.-Bat. in Gray Herbarium labeled *Benzoin sericeum S. & Z.; Herb. K. Shiota 49; K. Ichikawa 112.*

The species, as far as can be determined by the specimens at hand, does not occur in China. The large amount of material assigned to this species in the past, has proved to be *Litsea* and doubtfully *Litsea sericea.* The Chinese specimens (in fruit, of course), at first glance appear to be very much like the Japanese species, but they differ in the lower leaf surface being less pubescent at maturity, the pubescence of the young leaves being very tawny, and the mature leaves being more membranaceous than those of *Lindera sericea.* In shape, the leaves of the Chinese trees are more variable, usually with rounded and smaller leaves intermingled with the large acuminate leaves, and the fruiting pedicels and peduncles are very nearly equal in length, as opposed to the pedicels nearly two times the length of the peduncles in the Japanese species. The description of this new species of *Litsea* appears later in this paper. Most of the currently designated *Lindera umbellata* var. *sericea* from Japan were labeled thus because of the sericeous young leaves. On the same sheet are often mature leaves with scarcely a sign of pubescence except on the lower surface on the veins and the petioles, and that sparse pubescence is not of the soft villous kind to be found on the type of *Benzoin sericeum.* Therefore, these more or less glabrescent immature leaved specimens are undoubtedly true *Lindera umbellata* and not the variety *sericea.*

There is another possibility, which must be considered, and that is that there are perhaps two separate entities — *Lindera sericea* Blume, as outlined above, and distinct *L. umbellata sericea,* which shows little variation from *L. umbellata* proper. More complete and better material from Japan collected in all stages must be available to workers before the question of identities be settled satisfactorily.

Lindera sericea var. *β.* **glabrata** Blume, Mus. Bot. Lugd.-Bat. **1**: 324. 1851.

DISTRIBUTION: Japan.

The variety was under *Benzoin sericea* Blume on sheet from the Herbarium of Buitenzorg, and it may be the basis for all of the specimens labeled *Lindera umbellata* var. *sericea* from Japan. This specimen has smaller, more narrow leaves and is glabrescent. Because it is labeled *L. sericea* it may have been confused with true *L. sericea* of Blume, but might conceivably be his variety *glabrata.* Here also may be placed *A. Henry 79,* and *H. Mayr,* April 4, & June 15, 1886, from Ugo.

Lindera reflexa Hemsley in Jour. Linn. Soc. Bot. **26**: 391. 1891; Liou, Laurac. Chine Indoch. 128. 1932.

Lindera umbellata var. *latifolia* Gamble in Sargent, Pl. Wilson. **2**: 81. 1914.

Benzoin sericeum var. *tenue* Nakai, Fl. Sylv. Kor. **22**: 77. 1939.

For further synonymy, see Liou, l.c.

The type of *Lindera reflexa* is based on a specimen cultivated in the Hongkong Botanic Garden, from the North River above Canton. Most of the leaves on the type are rotundate-ovate, slightly cordate and obtuse, except for the leaves near the tip of the branch, which are obovate to elliptic and rounded at the base. None of the specimens accorded to *Lindera reflexa* exactly match the type, in leaf shape. For the most part, the latter are more acuminate at the apex, acutish at the base and rather elliptic in outline. The habit, pubescence and inflorescence are more stable and do not show such variation. It is a known fact that species in cultivation often show greater variation in young vegetative shoots. Hence, it is with no hesitation that the numbers below, in full leaf or fruit, are placed under *L. reflexa.* The young branchlets showing precocious flowers and very young leaves, however, might belong to any one of a number of species of eastern China. It is anyone's guess where they do belong. Gamble's variety *latifolia* of *Lindera umbellata,* from Hupeh, certainly has nothing to do with the species *L. umbellata.* The venation is of the same type as that of *L. reflexa,* the laterals arising almost horizontally from the midrib. There is less pubescence on Gamble's specimen, but no less than is to be found on many of the

so-called *L. reflexa* specimens. Gamble's variety is undoubtedly a poor specimen of the latter with slight geographical variation.

DISTRIBUTION: China.

KWANGTUNG: Hongkong Bot. Garden, cultivated, from North River, *No. 128* (TYPE of *Lindera reflexa,* Kew; photo & leaf tracing, AA), February 1, 1889; *CCC. 12194; W. T. Tsang 26337.* CHEKIANG: *R. C. Ching 2435, 4786, 4793, 5140, 5183; W. C. Cheng 2107; C. Y. Chiao 1019 (14318), 1044 (14343), 14436; H. H. Hu 1596; S. Chen 369, 495, 1157, 1519, 1676, 3150, 3209, 3679; Y. L. Keng 825, 994; W. Tang & W. Y. Hsia 382.* ANWHEI: *C. S. Fan & Y. Y. Li 164; S. C. Sun 1155; R. C. Ching 2627, 2746, 2820, 3119; S. S. Chien 1016; K. Ling 1151 (7731).* KIANGSI: *N. K. Ip 1064; H. H. Chung & S. C. Sun 337, 463; A. N. Steward 2749; E. H. Wilson 1621, 1632, 1639; A. Allison 10; J. L. Gressitt 1450; H. H. Hu 750 (?); T. H. Wang 232; S. K. Lau 4651.* HONAN: *A. N. Steward 1593 (9719).* HUNAN: *C. S. Fan & Y. Y. Li 156, 476.* HUPEH: *E. H. Wilson 610A* (TYPE of *Lindera umbellata* var. *latifolia,* fruit, Kew; photo & fragm. AA); *W. Y. Chun 5229.* KWEICHOW: *H. Handel-Mazzetti 255 (10765); W. Y. Chun 5782.* KWANGSI: *R. C. Ching 6143; C. Wang 41154; T. S. Tsoong (Z. S. Chung) 82032; W. T. Tsang 27606.* YUNNAN: *H. T. Tsai 57020 (?).*

All of the specimens from China cited by Nakai (see Nakai, l.c.) under *Benzoin sericeum* var. *tenue,* agree with the author's conception of *Lindera reflexa* as discussed above. Chen numbers 1239, 2765, cited by Nakai under *B. sericeum* var. *tenue,* the leaves of which are in very young stage, may be excepted, however, for in that condition it is difficult to determine the species.

Litsea szechuanica, spec. nov.

Arbor vel frutex parvus, 2.5–15 m. altus, ramulis fuscis vel atro-rubescentibus striatis glabris, novellis fulvo-tomentosis. Folia alterna, membranacea, elliptica vel obovata, 4–13 cm. longa et 2–6 cm. lata, rotundata, obtusata, acuta vel acuminata, basi acuta vel cuneata saepe inaequalia (rare, juventate rotundata), supra demum glabrescentia glabra (exceptis venis pubescentibus), viridia (fide collectoris), subtus primo fulvo-tomentosa demum glabrescentia, pallida, glauca, penninervia, nervis 6–8-jugis supra plus minusve inconspicuis subtus conspicue elevatis dense tomentosis, petiolo (5)–10–15 mm. longo pubescente. Inflorescentiae ♀ axillares. Umbellae ♀ 1–4, bracteis deciduis, pedunculatae, pedunculis 4–8 mm. longis pubescentibus. Flores 4–10 (?), 2–3 cm. longi, flavi (fide collectoris), glabrescentes, pedicellis 4–6

mm. longis gracilibus pubescentibus, lobis 6 oblongo-ellipticis 3 mm. longis, staminodiis 6, 2–(3) bi-glandulosis. Inflorescentiae ♂ axillares (?). Umbellae solitariae (?), bracteis deciduis, pedunculatae, pedunculis 3–4 mm. longis, pubescentibus. Flores 10 (?), 2–3 mm. longi, glabrescentes, pedicellis ± 10 mm. longis pubescentibus, lobis 6 ellipticis vel elliptico-obovatis ± 3 mm. longis, staminibus 9, 3 interioribus biglandulosis. Fructus parvus, subglobosus, breviter apiculatus, nigrescens, 3–4 mm. diam., disco plano haud crasso pubescente 1–2 mm. lato, pedicellis 10–12 mm. longis leviter crassis.

DISTRIBUTION: China (Szechuan, Yunnan, Shensi).

SZECHUAN: Kuan Hsien, Chien-Cheng Shan, *C. S. Fan & Class 139* (TYPE ♀, AA), April 4, 1938, alt. 1000 m., tree in forest, 30 ft. high, fl. yellow; Mt. Omei *F. T. Wang 23151,* July 2, 1931, alt. 1400 m., small tree 20 ft., diam. bh. 4 in., outside of temple, margin of thicket (fruit, AA); *Wang 20595, 20666, 20806, 22737; W. P. Fang 817; T. T. Yü 282, 418, 635, 705; E. H. Wilson 5176; S. S. Chien 5689.* YUNNAN: *H. T. Tsai 55967.* SHENSI: Tsinling-schan, centr. inter. mei et Liupa, in silvis mixtis den clivium *G. Fenzel 507,* May 1934 (♂, AA).

A species, the fruiting specimens of which have been placed under *Lindera umbellata, sericea* and even *glauca.* The very slender evidence that it is not a *Lindera* but a *Litsea* hangs on the dissection of a flower from an almost fragmentary branch tip with the specimen of *Fenzel 507.* Beyond a doubt, the fragment belongs with the rest of the material on the sheet, which matches the other members of the same species. The fulvous pubescence on the underleaf surface, concentrated into a tomentum on the younger parts of the plant, and the very small fruit set this species apart from the species of *Lindera* mentioned above. *Tsai no. 55967* and *Yü 635* and *705* are definitely a variant from the typical *L. szechuanica* and may even be another species. Whether *Lindera* or *Litsea* is impossible to say, because they are pistillate specimens.

There is a residue of specimens left after the disposal of the members of the *Lindera umbellata* complex. Whether they are *Lindera* or *Litsea* is difficult to say, since they are fruiting specimens. They do not match any material or description of known species. There are several species of *Litsea* among them *L. Forrestii* and *L. moupinensis* which were described from precocious flowers alone or flowers and very young leaves. It is anyone's guess what the mature leaves of these species may be. The following numbers are in this dubious position, each group probably representing a species.

YUNNAN: *T. T. Yü 16015.* SZECHUAN: *W. P. Fang 2210, 2863, 2915.* HUPEH: *W. Y. Chun 3888, 3908.*

Lindera tonkinensis Lecomte in Nouv. Arch. Mus. Hist. Nat. Paris, sér. v, **5:** 112, t. 8. 1913, Fl. Gén. Indoch. **5:** 155, t. 7. 1914; Liou, Laurac. Chine Indoch. 133. 1932.

Lindera tonkinensis is a part of the general complex which holds *Lindera strychnifolia* var. *Hemsleyana* (*L. Hemsleyana*) and var. *velutina,* and *Lindera pulcherrima* (*L. Thomsonii*). *Ching 7863* was placed under *Lindera Chunii* Merrill, in an early determination. It is evident that geographically as well as physically it is distinct, since it occurs only in Indochina, and Hainan and Kwangsi in China. The western Chinese entities are totally different from the former species. The larger leaves which, like those of *L. Chunii,* remain greenish brown on drying, but unlike *L. Chunii,* are not shining but opaque and more membranaceous, acuminate instead of caudate, the total lack of glaucescence or pubescence on the lower leaf surface, the entirely basal origin of the lateral nerves, as opposed to their arising several millimeters above the base. These are characters which readily separate *Lindera tonkinensis.*

DISTRIBUTION: French Indo-China and China.

FRENCH INDO-CHINA. Tonkin: *E. Poilane 25194, 25306bis.* Annam: *Poilane 19850; F. Evrard 2134.* Laos: *E. Poilane 20029.*

CHINA. Kwangsi: *R. C. Ching 7863.* Hainan: *F. C. How 72649, 73790; C. Wang 36364.* Yunnan: *C. W. Wang 72833, 73258; J. F. Rock 2759, 2795; H. T. Tsai 53242; A. Henry 11686, 11686A, B, D.*

Lindera pulcherrima (Wallich) Hooker f., Fl. Brit. Ind. **5:** 185. 1886, p.p.

Daphnidium pulcherrimum (Wall.) Nees in Wall. Pl. As. Rar. **2:** 63. 1831, Syst. Laurin. 610. 1836.

Tetranthera pulcherrima Wall. Num. List. 2567A, 1830, nomen nudum.

Benzoin pulcherrimum O. Kuntze, Rev. Gen. **2:** 569. 1891.

DISTRIBUTION: India.

INDIA: Nepal, *Wallich 2567A,* in 1821 (TYPE of *Tetranthera pulcherrima,* Kew; isotype, Gray).

The true *Lindera pulcherrima* of Wallich and Nees, based on *Wallich 2567A* from Nepal, has oblong-lanceolate leaves measuring 10–15 cm. long and 2–4.5 cm. wide, with a slender cauda measuring sometimes as

much as 2–2.5 cm. in length, and glaucous below. The specimens which are at hand representing the type do not have fruit.

Lindera pulcherrima var. **attenuata,** var. nov.

A typo differt foliis lanceolatis concoloribus, apice attenuatis interdum subcaudatis, plus minusve manifeste 3-pli-nerviis, pedicellis brevioribus.

DISTRIBUTION: southwestern China (Kwangsi, Kweichow, Hunan, Hupeh, Kwangtung).

KWANGSI: Kwei-lin District, Hsi-chang village and vicinity, Ch'i fen-shan, *W. T. Tsang 28435,* October 1–11, 1937, shrub? 6 ft. high, with very young ♀ fls., (AA); Loh Hoh Tsuen, Ling Yün Hsien, *A. N. Steward & H. C. Cheo 79* (TYPE ♂, AA), March 23, 1933, forest alt. 1880 m., shrub 3 m. high, flowers yellowish; *Steward & Cheo 363; S. K. Lau 28806; T. S. Tsoong* (*Z. S. Chung*) *83332.*

The Chinese material representing this variety, except for *Steward & Cheo 79* (♂ fl.) and *Tsang 28435* (♀ fl.), is in the fruiting stage. It differs from the species in having leaves less oblong and more narrowly ovate-lanceolate, with very attenuated tips hardly caudate as in *L. pulcherrima.* Considerable variation in leaf shape and size occurs but its presence is typical of this extremely variable group of plants. The variety may very possibly represent another species but because of the scarcity of material it seems advisable to designate it as a variety for the present. The last cited specimens have smaller leaves than the type, but they seem to belong in this category.

HUNAN: *C. S. Fan & Y. Y. Li 264; Handel-Mazzetti 670* (*11107*) (fruit, AA), in monte Yün-schan prope urbem Wukang, in silva elata frondosa umbrosa copiose, alt. 900–1400 m. July 20, 1918, frutex aromaticus. HUPEH: *E. H. Wilson 3725.* KWANGTUNG: *S. P. Ko 52948.*

Lindera pulcherrima var. **glauca** Lecomte in Nouv. Arch. Mus. Hist. Nat. Paris, sér. v, **5:** 117. 1913; Liou, Laurac. Chine Indoch. 135. 1932.

DISTRIBUTION: French Indo-China.

Only a photo of this variety is available. However, it seems to have been segregated, not from the true *L. pulcherrima,* but from the Hooker & Thomson specimen included in the latter (Hook. f., Fl. Brit. Ind. **5:** 185. 1886). It has the look of belonging with the species described below, but the description of Lecomte is scant and until the type itself is examined, no further disposition can be made.

Lindera Thomsonii, spec. nov.

Lindera pulcherrima Hooker f., Fl. Brit. Ind. 5: 185. 1886, p.p.

Arbor vel frutex 4–9 m. altus, ramulis teretibus striatis griseis vel rubescentibus glabris novellis dense sericeis exceptis, lenticellis conspicuis. Folia alterna, elliptica vel ovata, chartacea, 7–11 cm. longa et 2.5–4.5 cm. lata, longe caudata, cauda usque 3.5 cm. longa, basi acuta vel cuneata, utrinque glabra, bene reticulata, supra ± nitida, subtus glauca, 3-nervia, nervis utrinque conspicuis elevatisque, circa 5–9 mm. supra basim laminae divergentibus, saepe nervis lateralibus conspicuis supra medium laminae, petiolo usque 1.5 cm. longo glabro. Umbellae ♂ plerumque axillares, solitariae, brevipedunculatae, bracteis deciduis glabris. Flores 3–10, pubescentes, flavi (fide collectoris), 5–6 mm. longis, pedicellis 3–4 mm. longis fulvo-pubescentibus, lobis 6 oblongo-lanceolatis vel ovato-lanceolatis ± 3–5 mm. longis, staminibus 9, ± 4.5 mm. longis exsertis, 3 interioribus bi-glandulosis, ovario pubescente. Umbellae ♀ axillares, bracteis deciduis. Flores 4–12, pubescentes, albi, flavi vel viridescenti-flavi (fide collectoris), ± 3 mm. longis, pedicellis 4–5 mm. longis gracilibus fulvo-pubescentibus, lobis 6 oblongis ± 2 mm. longis, staminodiis ± 6, 1–2 plus minusve petaloideis, ovario ellipsoideo pubescente. Fructus ellipsoideus, 5–6 mm. longus, ± 3 mm. latus, nigrescens, disco parvo inconspicuo glabro, pedicello leviter crasso ± 1 cm. longo.

DISTRIBUTION: India, French Indo-China and China.

INDIA: Khasia: *J. D. Hooker & T. Thomson*, regio temp. alt. 5–7000 ft., (TYPE, fruit, Gray). Upper Burma: *F. K. Ward 9381, 9325; J. F. Rock 7409.*

FRENCH INDO-CHINA: Tonkin, *E. Poilane 19108.*

CHINA. Yunnan: Shweli River drainage basin and environs of Tengyueh, *J. F. Rock 8007* (TYPE ♂, AA), February 1923, shrub or small tree with yellow flowers; Chen Kang Hsien, near by village, *C. W. Wang 72528* (♀, AA), March 1936, alt. 2000 m., tree? 4 m. high, flowers greenish yellow; *C. W. Wang 72474; G. Forrest 9517, 26243, 26259; H. T. Tsai 56361, 56362; A. Henry 9629.* SZECHUAN: *E. Faber 242.*

A species exceedingly variable in leaf shape, except for the drip-tip, which is constant throughout. The leaves are conspicuously reticulate after the pattern of all leaves of this group. Hooker placed his specimen from Khasia under *L. pulcherrima* amending the original description to include it. Subsequent workers have done likewise until *L. pulcherrima* has become even more variable as a species and its range

been extended to include all of southeastern Asia. All of these broader and shorter elliptic leaved caudate specimens, however, belong under *L. Thomsonii*. The young leaves and stems are tawny-sericeous but lose their pubescence early, the lower surface of the leaves being glaucous at maturity. Both the pistillate and staminate flowers are tawny-pubescent, the staminate being larger throughout and more pubescent.

The following numbers in fruiting stage are probably variations within the species of *L. Thomsonii*. KWANGSI: *S. P. Ko 56028*. YUNNAN: *T. T. Yü 17089, 17267; C. W. Wang 67078, 67304, 67350*.

The species is named for Mr. T. Thomson, co-collector with J. D. Hooker in India.

Lindera urophylla (Rehder), comb. nov.

Benzoin urophyllum Rehder in Jour. Arnold Arb. **1**: 146. 1919; Chun in Contr. Biol. Lab. Sci. Soc. China 1^5: 52. 1925.

Lindera caudata Diels in Engl. Bot. Jahrb. **29**: 352. 1901, non (Nees) Ktze.

DISTRIBUTION: western China (Szechuan, Kweichow).

SZECHUAN: *C. Bock & A. v. Rosthorn 781* (TYPE of *Lindera caudata*, Berlin; photo & fragm., AA); *Y. Liu 1424*. KWEICHOW: *Y. Tsiang 6457*.

A species as yet known only in the fruiting stage. The plant is slender, glabrous throughout and the leaves have the patterned reticulation and drip-tip usual for this group. The leaves are almost membranaceous, are pale green and strikingly glaucous below.

Lindera subcaudata (Merr.) Merrill in Philip. Jour. Sci. **15**: 237. 1919; Liou, Laurac. Chine Indoch. 133. 1932.

Neolitsea subcaudata Merrill in Philip. Jour. Sci. **13**: 137. 1918.

Benzoin subcaudatum (Merr.) W. Y. Chun in Contr. Biol. Lab. Sci. Soc. China 1^5: 38. 1925.

DISTRIBUTION: southeastern China (Kwangtung).

KWANGTUNG: *C. O. Levine 1351* (TYPE, fruit, Manila; isotype, Gray, AA); *Merrill 11016; To Kang Peng 2707* (♂ , Manila); *C. O. Levine & F. A. McClure 7027; T. M. Tsui 71*.

The species was first described from fruiting specimens only, under *Neolitsea*, but when staminate material was available the new combination under *Lindera* was made. Tsui's specimen from Loh-Fau Shan is a staminate flowering branch. The leaves are more elliptic than oblong and are wider accordingly than are those of the pistillate plant.

Lindera supracostata Lecomte in Nouv. Arch. Mus. Hist. Nat. Paris, sér. v, **5**: 112. 1913; Liou, Laurac. Chine Indoch. 132. 1932. For further synonymy, see Liou, l.c.

DISTRIBUTION: western China (Yunnan).

YUNNAN: *J. M. Delavay 2579* (SYNTYPE, Paris; isosyntype, AA), *3996; H. T. Tsai 57555, 52939, 57319, 58370; T. T. Yü 8151, 17026; Siméon Ten 577; A. Henry 10873; G. Forrest 10615, 27394; E. E. Maire 228, 465.*

A striking species with very pale green 3-nerved acuminate leaves shining above and conspicuously reticulate in the pattern usual for the group, with costa and laterals very prominently reticulate; below, nervation less conspicuous, but the veins standing out yellowish against the glaucous background. There is a tendency toward a rhomboid base, pronounced in some leaves and scarcely discernible in others on the same branch. Frequently the tendency is manifest only in a slight inequality at the base of the leaf. *Yü 17026* has leaves smaller in the main and more bluntly and abruptly acuminate than those of the other specimens, but none the less certainly belongs with *L. supracostata.*

Lindera supracostata var. **attenuata,** var. nov.

A typo differt foliis tenuioribus attenuatioribus angustioribus.

DISTRIBUTION: western China (Yunnan, Szechuan).

YUNNAN: *G. Forrest 11110* (TYPE ♀, AA); between Likiang, Tungshan, Tuinaoko, and Tsilikiang, dry Yangtze drainage basin, *J. F. Rock 9783* (fruit, AA), May 1923, alt. 9000 ft., shrub 8–10 ft.; *H. T. Tsai 57336.* SZECHUAN: *C. Schneider 754.*

Differs only in the more narrow and more attenuate leaves, not surpassing 2.3 cm. in width. The tendency toward a rhomboid base is less apparent than in the species.

Lindera Vernayana, spec. nov.

Frutex parvus, ramulis teretibus griseis gracilioribus primo adpresse pubescentibus demum glabris. Folia alterna, membranacea, elliptica, 7–9 cm. longa et 2–3 cm. lata, longe caudata, cauda ± 2 cm. longa, saepe falcata, basi acuta, pallide viridia, supra opaca, glabra, bene reticulata, subtus tota facie breviter adpresse argenteo-sericea, 3-nervia, nervis utrinque conspicuis, circa 1–2 mm. supra basim laminae divergentibus, petiolo 5–(9) mm. longo tenui glabrescente demum glabro. Umbellae ♂ axillares, brevi-pedunculatae, bracteis deciduis. Flores 5–8, sparse pubescentes, pedicellis 1–2 mm. longis tenuibus pubescentibus, lobis 7–8 ellipticis extus sparse pubescentibus, staminibus 9. Umbellae ♀ et fructus ignoti.

DISTRIBUTION: Upper Burma and China.

UPPER BURMA: Panwa Pass, *F. K. Ward (Vernay-Cutting Exped.) 405* (TYPE, AA), March 15, 1939, evergreen forest, alt. 2135 m., small shrub with leaves silver beneath with appressed silky hairs.

CHINA: Yunnan, *H. T. Tsai 55976.*

A new species at first glance difficult to separate from *Lindera Thomsonii* and *L. Hemsleyana* var. *velutina.* The more slender, pale grey branchlets, narrower leaves with shorter appressed silky pubescence, persisting in the flowering stage on adult leaves, distinguish it easily. It is named for Mr. Vernay, who with Mr. Cutting made possible the recent expedition into Burma.

Lindera Hemsleyana (Diels), comb. nov.

Lindera strychnifolia F.-Vill. var. *Hemsleyana* Diels in Bot. Jahrb. **29**: 352. 1901; Gamble in Sargent, Pl. Wilson. **2**: 83. 1914; Liou, Laurac. Chine Indoch. 136. 1932.

Lindera strychnifolia var. ? Hemsl. in Jour. Linn. Soc. Bot. **26**: 392. 1891.

Benzoin strychnifolium O. Ktze. var. *Hemsleyanum* (Diels) Rehder in Jour. Arnold Arb. **1**: 145. 1919; W. Y. Chun in Contr. Biol. Lab. Sci. Soc. China 1^5: 41. 1925.

DISTRIBUTION: southeastern China.

For years this entity has persisted as a variety of *L. strychnifolia,* with which it actually has very little in common. The latter species is affiliated with the group which contains *L. Chunii, L. caudata,* etc. which for the most part lacks the striking, patterned reticulation apparent on the upper surface. With the elevation of this variety to specific rank and the acknowledgment of a variety or so in conjunction with it, it is to be hoped that this particular section of the genus will become less confusing in the future.

The species is distinct from the others in the group for the almost velutinous lower leaf surface, which on older branchlets becomes merely glaucous, and for the acuminate rather than caudate leaf tips.

Lindera Hemsleyana var. **velutina** (Forrest), comb. nov.

Lindera strychnifolia F.-Vill. var. *velutina* Forrest in Not. Bot. Gard. Edinb. **13**: 166. 1921.

DISTRIBUTION: China (Yunnan) and Upper Burma.

CHINA. Yunnan: *G. Forrest 15928* (SYNTYPE, Edinb.; isosyntype, AA); *17658* (SYNTYPE, Edinb.; isosyntype, AA); *J. F. Rock 7631; C. W. Wang 72058.*

UPPER BURMA: *F. K. Ward (Vernay-Cutting Exped.) 430, 457.*

It seems that this species, as viewed from description and the two syntypes available, is hardly velutinous on the lower leaf surface but rather more sericeous. The long silky hairs apparent in early stages become sparse and dark with age, until on the older branchlets there is only an occasional patch of hairs left to indicate the former heavy pubescence. This last feature, the variety has in common with its erstwhile species *L. strychnifolia*.

Lindera Stewardiana, spec. nov.

Arbor vel frutex 5 m. altus, ramulis teretibus, novellis angulatis striatis in sicco rubro-brunnescentibus (griseis fide collectoris) glabris. Folia alterna, lanceolata vel lanceolato-elliptica, subcoriacea, 9–12 cm. longa et 2.5–4 cm. lata, plus minusve acuminata, basi acuta, utrinque glabra, supra conspicue reticulata, nitida, viridia, subtus glauca, 3-nervia (haud 3-pli-nervia), nervis supra plus minusve conspicuis subtus prominenter elevatis, petiolo 1–1.5 cm. longo glabro. Inflorescentiae numerosae axillares, umbellatae. Umbellae ♂ 2–6–(?), subsessiles vel brevipedunculatae, bracteis rotundatis vel ovatis argenteo-sericeis deciduis. Flores 4–7–(?), pubescentes, flavi, fragrantes (fide collectoris), pedicellis 3–5 mm. longis dense ferrugineo-pubescentibus, lobis 6 ellipticis subaequalibus ± 2.5 mm. longis, staminibus 9 exsertis ± 4.5–5 mm. longis, 3 interioribus bi-glandulosis. Fructus immaturus, ellipsoideus, apiculatus, disco pubescente, plano haud crasso, pedicello 7–10 mm. longo pubescente leviter crasso.

DISTRIBUTION: western China (Kwangsi).

KWANGSI: *A. N. Steward & H. C. Cheo 3* (TYPE ♂, AA), Loh Hoh Tsuen, Ling Yun Hsien, March 12, 1933, alt. 1150 m., brushy rocky slope, tree 5 m. high, fl. yellow, fragrant, bark grey, leaves used for making incense; valley in Chin-Tong, *Steward & Cheo 397*, alt. 1300 m., ? vine on tree? (young fruit, AA); *R. C. Ching 5835; S. P. Ko 55793*.

A beautiful species striking because of the luxuriance of the staminate flowers and the shining leaves, glaucous on the lower surface. It is near *L. pulcherrima* from India. The infrutescence also is as abundantly full-fruited and consists of as numerous umbels accordingly as the inflorescence of the staminate branchlets. The other specimens cited do not have such an abundance of fruit as the type material. *Steward and Cheo 397* on the field label gives the information that the plant is a vine on a tree. Undoubtedly, there must have been an error in copying, for the specimen is certainly from a tree or at least a shrub.

The species is named for Dr. A. N. Steward, senior collector of the type and Professor of Botany at Nanking University.

Lindera Gambleana, spec. nov.

Arbor parva, 1.5–6–(9) m. alta, ramulis teretibus striatis fuscis, novellis pallide virescentibus glabris. Folia alterna, lanceolato-oblonga vel lanceolato-elliptica, subcoriacea, 8–12 cm. longa et 2–4.5 cm. lata, acuminata, basi acuta vel cuneata, utrinque glabra, supra viridia, subtus glauca (fide collectoris), 3-pli-nerviis, nervis supra minus conspicuis quam subtus, subtus elevatis circa 3–5 mm. supra basim laminae divergentibus, supra medium nervis ca. 1–2 lateralibus subtus conspicuis, petiolo 1–1.5 cm. longo glabro. Inflorescentiae ♂ numerosae, axillares umbellatae. Umbellae 2–6–(?), subsessiles vel brevi-pedunculatae, pubescentes, bracteis deciduis pubescentibus. Flores 4–8–(?) pubescentes, flavescenti-albi (fide collectoris), pedicellis 3–4 mm. longis dense fulvo-pubescentibus, lobis 6 oblongis ± subaequalibus ± 4 mm. longis, staminibus 9 ± 3.5 mm. longis, 3 interioribus bi-glandulosis. Umbellae ♀ 1–3, brevi-pedunculatae, bracteis plus minusve persistentibus. Flores 4–8–(?), pubescentes, flavescenti-albi vel viridescenti (fide collectoris), brevi-pedicellati, pedicellis ± 1 mm. longis pubescentibus, lobis 6 oblongis ± 2.5 mm. longis, staminodiis 9, ovario obovoideo glabro. Fructus ignotus.

DISTRIBUTION: western China (Szechuan).

SZECHUAN: Mt. Omei, *T. T. Yü 495* (TYPE ♂, AA), April 22, 1932, alt. 2400 m., mt. slope among conifers, tree 12 ft., leaves dark green above, bluish beneath, flowers yellowish white; Mt. Omei, *T. T. Yü 494* (♀, AA), April 22, 1932, under Abies forest, tree 20 ft., d.b.h. 5 in., bark dark grey, leaves dark green above, bluish beneath, flowers yellowish white; *Yü 384, 487; E. H. Wilson 5181; W. P. Fang 2268* (?); *F. T. Wang 23152, 23152 C* (?).

A species near *Lindera Stewardiana,* but separated by firmer, 3-pli-nerved leaves not shining above, with less prominent reticulation and more prominent lateral veins on the lower surface above the middle of the leaf. The flowers are less abundant with shorter pedicels and more appressed pubescence on the lobes.

The species is named in honor of Dr. J. S. Gamble, who determined the Lauraceae of E. H. Wilson's western Chinese collections published in Sargent's Plantae Wilsonianae.

The following specimens are listed as possibly being the fruiting specimens of *L. Gambleana.* There are differences apparent in the near-caudate rather than acuminate tip, the tendency toward smaller leaves in some cases and in others larger leaves. Perhaps some of these are variations typical of the pistillate tree. There are undoubtedly more

than one entities represented here, but they cannot be separated without the study of more representative material.

KWANGSI: *C. Wang 40997.* SZECHUAN: *F. T. Wang 23264; T. T. Yü 373, 447; C. Y. Chiao & C. S. Fan 301.* YUNNAN: *H. T. Tsai 52325, 52280, 54801, 56605, 58416; T. T. Yü 20412.*

Lindera Gambleana var. **floribunda,** var. nov.

A typo differt ramulis novellis dense fulvo-sericeis, junioribus pubescentibus, foliis subtus velutinis, petiolis pubescentibus, floribus numerosis dense aggregatis, pedicellis ± 4 mm. longis.

DISTRIBUTION: western China (Yunnan).

YUNNAN: *G. Forrest 9773* (TYPE ♂, AA); *G. Forrest 7585* (young fruit, AA), *9621; T. T. Yü 16395* (?).

A very attractive tree particularly when young branchlets are growing out, but undoubtedly a variety of *L. Gambleana.* In the abundance of inflorescences both staminate and pistillate it recalls *L. Stewardiana,* but is quickly discernible from the species by the pubescence on the lower leaf surface.

Lindera strychnifolia F.-Vill. in Blanco, Fl. Filip. ed. 3, Nov. Append. 182. 1880; Liou, Laurac. Chine Indoch. 136. 1932. For further synonymy see Liou, l.c.

DISTRIBUTION: eastern Asia and the Philippines.

There has long been confusion centering about this species, and related species such as *L. caudata, L. Chunii, L. rufa, L. Eberhardtii,* and *L. Playfairii.* All species have more or less ovate leaves which are long-acuminate to extremely long-caudate, glaucous or pubescent below, tri- or tri-pli-nerved. These characters intergrade with a facility that renders clear-cut definition of the species very difficult. All the above mentioned species are distinguished from *L. strychnifolia* proper by the fact that in the latter species the leaves are always ovate-rotund. *Lindera strychnifolia* var. *Hemsleyana* (*L. Hemsleyana*) and var. *velutina,* together with their related entities, belong in a group distinct from and never confused with the "caudata" complex. The leaves of the former are usually prominently reticulate on the upper surface, and the transverse veins, parallel with each other and oblique to the midrib and two laterals, form a distinct pattern peculiar to the group and lacking in the "caudata" complex. These species and varieties are being discussed below.

Lindera caudata Hooker f., Fl. Brit. Ind. **5:** 184. 1886; Liou, Laurac. Chine Indoch. 133. 1932. For further synonymy, see Liou, l.c.

DISTRIBUTION: India, French Indo-China, and China.

FRENCH INDO-CHINA. Laos: *E. Poilane 25617.* Cochinchina: *F. Evrard 1988, 2252.*

CHINA. Kwangsi: *R. C. Ching 6834, 7948; W. T. Tsang 22121, 22242, 22621, 23983, 24680.*. Yunnan: *T. T. Yü 16236.*

Lindera caudata is separated easily by its 3-nerved, always pubescent leaves, in which the three nerves are very prominent and pubescent in all stages, persisting to near the tip of the leaf. The leaf itself is more often oblong-elliptic than ovate. In spite of the name, the species is more long-acuminate than definitely caudate. The branchlets and petioles are pubescent and the umbels sessile.

Lindera rufa Gamble in Jour. As. Soc. Bengal. **75:** 200. 1912; Liou, Laurac. Chine Indoch. 132. 1932. For further synonymy see Liou, l.c.

DISTRIBUTION: Malaya and China?

Reported by Liou from Kweichow. The species can be set apart by its ovate, long-acuminate leaves which are tawny-villous when young, becoming glaucous with age. The petioles are persistently pubescent. The nervation is 3-pli-nerved, the nerves fading out above the middle of the leaf. The young branchlets and buds are densely ferrugineous-tomentose, the pubescence later becoming darker. *Poilane 975* from French Indo-China may belong here. The leaves are more 3-nerviate than 3-pli-nerviate and may or may not be glaucous underneath, after losing their early tawny or pale-ferrugineous pubescence.

Lindera Chunii Merrill in Lingnan Sci. Jour. **7:** 307. 1929; Liou, Laurac. Chine Indoch. 133. 1932.

DISTRIBUTION: southeastern China.

Lindera Chunii stands out among these species because of the bright green upper surface of the leaves and the lower surface covered with closely appressed dense silvery, golden or coppery pubescence, the color depending on the age of the branch at the time of gathering. The leaves are definitely caudate and 3-pli-nerved. The umbels are truly pedunculate.

KWANGSI: *T. S. Tsoong* (*Z. S. Chung*) *82186.* KWANGTUNG: *W. Y. Chun 6327* (TYPE ♀, Manila; isotype, AA).

Lindera Playfairii (Hemsl.) Allen in Ann. Missouri Bot. Gard. **25:** 400. 1938 (preprint 1937).

Litsea? Playfairii Hemsl. in Jour. Linn. Soc. Bot. **26:** 384. 1891.
Neolitsea Playfairii (Hemsl.) Chun in Contr. Biol. Lab. Sci. Soc. China.

1°: 66. 1925; Liou, Laurac. Chine Indoch. 145, t. 1932.
Lindera alongensis Lecomte in Nouv. Arch. Mus. Hist. Nat. Paris, sér. v, **5**: 118. 1913.

DISTRIBUTION: China and French Indo-China.

CHINA. Kwangtung: *G. M. Playfair* (TYPE *Litsea? Playfairii*, ♂ Kew; photo & fragm. AA). Kwangsi: *H. Y. Liang 69330; F. C. How 73871.*

FRENCH INDO-CHINA. Tonkin: *H. Lecomte & A. Finet 823* (TYPE of *L. alongensis* Paris; photo, AA).

The two species *L. Playfairii* and *L. alongensis* are conspecific, as far as can be told from the descriptions and photographs of the types available. The type of *L. Playfairii* is staminate, while that of *L. alongensis* is pistillate.

Lindera Eberhardtii Lecomte in Nouv. Arch. Mus. Hist. Nat. Paris, sér. v, **5**: 115. 1913, Fl. Gén. Indoch. **5**: 156. 1914; Liou, Laurac. Chine Indoch. 135. 1932.

DISTRIBUTION: French Indo-China.

The species differs from *Lindera Playfairii* in that the leaves are pilose as well as glaucous below. The nervation, according to Lecomte, is 3-nerved, like that of *L. Playfairii* and his *L. alongensis*, but the nerves arise a few millimeters above the base. It differs from *L. rufa* in the absence of ferrugineous pubescence on the young leaves and branchlets.

Lindera flavinervia, spec. nov.

Arbor 9–15 m. alta, ramulis angulatis striatis rugosis fuscis, glabris. Folia alterna, late elliptica, membranacea, 6–12 cm. longa et 3.5–6.5 cm. lata, acuta vel breviter acuminata, basi rotundata vel cuneata, utrinque glabra, supra bene reticulata, viridia, subtus pallida vel leviter glauca, 3-nervia, nervis utrinque conspicuis elevatisque flavis circa 5–9 mm. supra basim laminae divergentibus, ± 6 nervis lateralibus plus minusve conspicuis, petiolo 1.5–2.5 cm. longo glabro. Umbellae ♂ plures, axillares, subsessiles, bracteis deciduis. Flores parvi, ± 6, glabri, virides (fide collectoris), pedicellis ± 5 mm. longis minute pubescentibus, lobis 6, 3 interioribus ovato-ellipticis ± 3–4 mm. longis, 3 exterioribus late ovatis ± 1.5–2 mm. longis, staminibus 9, parvis inclusis, 3 interioribus bi-glandulosis. Fructus subglobosus, ± 8 mm. diam., nigrescens (viridis, fide collectoris), cupula glabra 2–3 mm. longa ± 4 mm. lata, pedicello ± 8 mm. longo, crasso. Umbellae ♀ immaturae.

DISTRIBUTION: China (Yunnan).

YUNNAN: Mienning, Hopientsun, *T. T. Yü 18160* (TYPE ♂, AA),

Nov. 2, 1938, alt. 2100 m., tree 4.5–6 m. high, flower green, common among forest; Chenkang, Snow Range, Tapingchang, *Yü 17245*, Aug. 6, 1938, at 2350 m. alt., tree 9–15 m. high, common among forest (fruit, AA).

Near *Lindera fruticosa* Hemsl.[1] but differing in abundant, many flowered sessile inflorescences with short-pedicelled flowers, thicker leaves with distinct venation, and more numerous lateral veins. Also, the small glabrous flowers with the three inner lobes nearly twice as large as the three outer ones, set the species apart at once.

Here tentatively might be placed *C. W. Wang No. 73085* from Shung-Kiang on mountain slope at 2200 m. altitude. The specimen has leaves less distinctly veined, larger and less firm, but the general habit and fruit indicate an affiliation with *Lindera flavinervia*.

Herbarium, Arnold Arboretum,
Harvard University.

[1] *Lindera fruticosa* Hemsl. in Jour. Linn. Soc. Bot. **26**: 388. 1891; Allen in Ann. Missouri Bot. Gard. **25**: 399. 1938 (preprint 1937).